



DVP01PU-H Position Control Module

Instruction Sheet



Warning

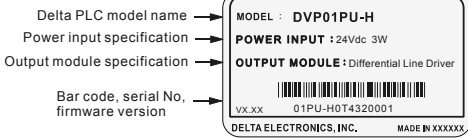
- ✓ This Instruction Sheet only provides descriptions for installation, wiring and trial run. For further infromation, please refer to special module of PLC Application Manual.
- ✓ Do NOT touch terminals when power on. Please turn off the power before wiring.
- ✓ This is an OPEN TYPE PLC. The PLC should be kept in an enclosure away from airborne dust, humidity, electric shock risk and vibration. Also, it is equipped with protective methods such as some special tools or keys to open the enclosure, in order to prevent hazard to users or damage the PLC.
- ✓ Do NOT connect the AC input power to any of the input/output terminals, or it may damage the PLC. Check all the wiring prior to power up.

1 Introduction

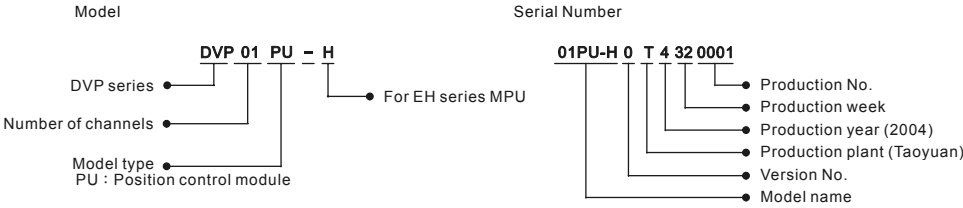
1.1 Model Explanation and Peripherals

01PU (position control unit) is mainly applied to the speed/position control of step/servo driven system. The maximum output pulse can be up to 200 KPPS, and built-in various route control modes. The DVP-PLC EH series can read/write 01PU via FROM/TO instrucionts. There are 54 CRs(Controlled Register) in 01PU and 16 bits for each register. The 32-bits data is composed of 2 continuous CR number.

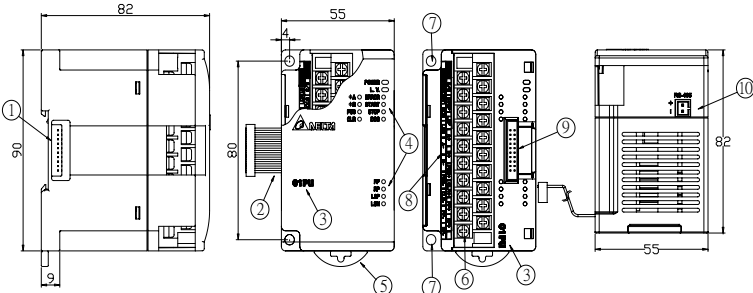
Nameplate



Model & Serial Number



1.2 Product Profile and Outline (LED Indicator and Terminal Block)



Unit: mm

1.DIN rail track (35mm)	2.Mounting wire to connect extension module/extension unit
3.Model name	4.Status Indicator (Power, Run and ERROR)
5.DIN rail clip	6.Terminal
7.Mounting hole	8.Terminal layout
9.Extension port to connect extension module/unit	10. RS-485 communication port

LED Display

POWER : Power indicator, +5V internal power	START : Start input
LV : Low voltage indicator (lit when external input power is lower than 19.5V)	STOP : Stop input
ERROR : Error occurred indicator. It will blink when CR#44 is not 0.	DOG : DOG (near point signal) input
	FP : CW pulse output
	RP : CCW pulse output

LSP : Right limit input indicator	ΦA : A-phase input of manual pulse generator
LSN : Left limit input indicator	ΦB : B-phase input of manual pulse generator
PG0 : Zero signal input indicator	CLR : Output clear signal

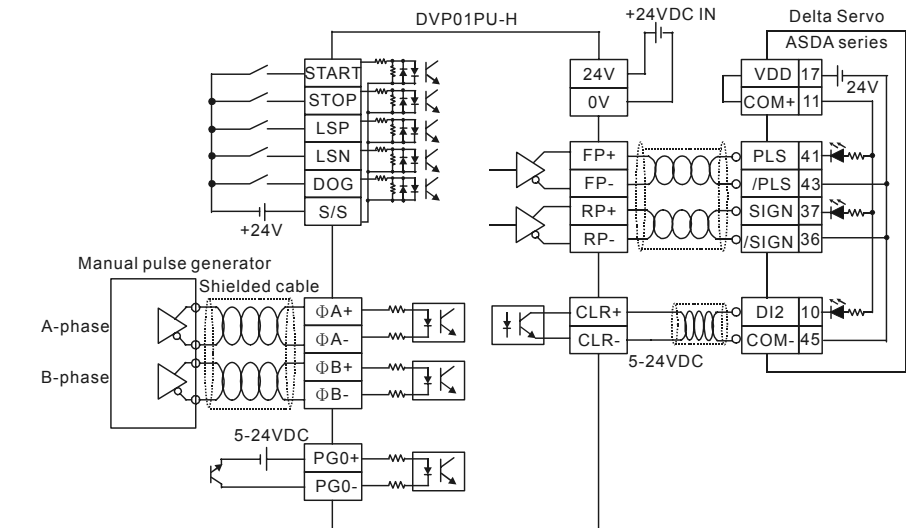
Input/Output Terminal

Description	Terminal name	Explanation	Response character
Power supply	+24V, 0V	Power input/DC24V (-15~+20%) Current consumption 100mA	-
	START	Start input terminal	15ms/50ms
	STOP	Stop input terminal	15ms
Input	LSP / LSN	Input right/left limit	1ms
	ΦA+, ΦA-	A-phase terminal (+, -) of manual pulse generator input (line driver input)	200KHz
	ΦB+, ΦB-	B-phase terminal (+, -) of manual pulse generator input (line driver input)	200KHz
	PG0+, PG0-	Zero signal input terminal +, - (line driver input)	1ms
	DOG	Offers two different functions depending on operation mode. (1) It is near-point signal in zero return mode. (2) It is start signal on interrupt 1st or interrupt 2nd speed mode.	1ms
	S/S	Signal common terminal of these inputs (START, STOP, DOG, LSP, LSN)	-
Output	CLR+, CLR-	Clear signal (clear signal of internal error counter for Servo drive)	130ms
	FP+, FP-	FP/RP mode: CW pulse output I/O mode: Output pulse AB-phase mode: A-phase output	200KHz
	RP+, RP-	FP/RP mode: CCW pulse output I/O mode: direction output AB-phase mode: B-phase output	200KHz

1.3 Wiring

- Please wire I/O by O-type or Y-type terminals as the specification shown at left. The torque of PLC terminal screw should be 5~8 kg-cm (4.3~6.9 in-lbs).
- I/O signal wires or power supply should not run through the same multi-wire cable or conduit.
- Use copper conductors only, 60/75°C.

Input/Output Circuit



2 Specifications

2.1 Function Specifications

Item	Description
Power supply	DC24V(-15% ~ +20%), Current consumption 140±30mA Power is supplied from EH series or external power supply.
Max. number of connected axes	8 units (axes); (All I/O points are not occupied. There are 8 special extension units at most to connect to EH series.)
Distance instruction	Distance value is set by CR. 1. Setting value: -2, 147,483,648~+2,147,483,647; 2. Selectable unit: um, mdeg, 10 ⁻⁴ inch, Pulse; 3. Selectable rate: 10 ⁰ , 10 ¹ , 10 ² , 10 ³ ; 4. Selectable position: absolute and relative position instruction
Speed instruction	Speed value is set by CR. 1. Setting value: -2,147,483,648~+2,147,483,647 (conversion value of 10~200KPPS pulse); 2. Unit selectable: pulse/s, cm/min, 10deg/min, inch/min
External output	Photo coupler is for insulation and there are LED indications for all output/input signals. Outputs: FP and RP (line driver output 5V) Output: CLR is the type of NPN open collector transistor output (5~24VDC, less than 20mA)
External input	Photo coupler is for insulation and there are LED indications for all output/input signals. Input point: START, STOP, LSP, LSN, DOG(contact or open collector transistor, 24VDC±10%, 5±1mA) Inputs: ΦA, ΦB(line driver or open collector transistor, 5~24VDC, 6~15mA) Input: PG0 (line driver or open collector transistor, 5~24VDC, 6~15mA)
Pulse output format	Three selectable modes: Pulse/Dir, FP(CW)/RP(CCW), A/B (all modes are line driver output)
Position program & data transmission	The DVP-PLC EH series can read/write data in CR via FROM/TO instrucionts. The 32-bits data is composed of 2 continuous CR number. The range of 16-bits CR is CR#0~CR#53.

Item	Description
Connect to DVP-PLC in series	When DVP-01PU modules are connected to an MPU, the modules are numbered from 0 to 7. 0 is the closest and 7 is the farthest to the MPU. 8 modules is the max and they do not occupy any digital I/O points of the MPU.

2.2 Other Specification

Environmental specifications	
Operation/Storage	1. Operation: 0°C~55°C (Temperature), 50~95%(Humidity), pollution degree 2 2. Storage: -25°C~70°C (Temperature), 5~95% (Humidity)
Vibration/Shock immunity	Standard: IEC1131-2, IEC 68-2-6 (TEST Fc)/ IEC1131-2 & IEC 68-2-27 (TEST Ea)
Antistatic spec.	All places between terminals and ground comply with the spec.

3 Control Register

DVP-01PU Position Control Unit					
CR No.				Content	Setting Range
HW	LW	Address	Latched	Attribute	
#0	#0	H'4190	✓	R	Model No.
#2	#1	H'4191	✓	R/W	Pulse required to rotate motor for 1 revolution (A)
#4	#3	H'4193	✓	R/W	Machine travel range while motor rotate for 1 revolution (B)
#5	H'4195	✓	R/W	Parameter setting Factory setting: H'0000	b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0

b1	b0	Unit	Motor unit	Combined unit	Machine unit	b3	b2	Position rate setting	b5	b4	Pulse output format
0	0	Motor	pulse	um		0	0	10 ⁰	0	0	FP + RP
0	1	Machine	pulse	m deg		0	1	10 ¹	0	1	Pulse + direction
1	0	Combined	pulse	10 ⁻⁴ inch		1	0	10 ⁻²	1	0	A/B Phase pulse
1	1		pulse/sec	cm/min		1	1	10 ⁻³	1	1	
			pulse/sec	10deg/min							
			pulse/sec	inch/min							

bit #	Description
6	When b[6]=0: positive logic, LSP input signal is ON, LPS signal is given. When b[6]=1: negative logic, LSP input signal is OFF, LPS signal is given.
7	When b[7]=0: positive logic, LSN input signal is ON, LSN signal is given. When b[7]=1: negative logic, LSN input signal is OFF, LSN signal is given.
8	When b[8]=0: zero return is executed to the direction of CP's decreasing value. When b[8]=1, zero return is executed to the direction of CP's increasing value.
9	When CW running is executed: if b[9]=0, CP value is increasing. If b[9]=1, CP value is decreasing.
10	When b[10]=0: DOG rising-edge is triggered. When b[10]=1,DOG falling-edge is triggered. (Interrupt 1st and interrupt 2nd speed position modes are enabled.)
11	When b[11]=0: positive logic, DOG input signal is ON, DOG near point signal is given. When b[11]=1: negative logic, DOG input signal is OFF, DOG near point signal is given. When in zero return mode, interrupt 1st and interrupt 2nd speed position modes are enabled.
12	When b[12]=0: trapezoid acceleration line is chosen. When b[12]=1, S acceleration line is chosen.
13	When b[13]=0: 15ms; when b[13]=1: 50ms(for noise filter).
14	When b[14]=0: positive logic, START input signal is ON, START input. When b[14]=1: negative logic, START input signal is OFF, START input.
15	When b[15]=0: positive logic, STOP input signal is ON, STOP input. When b[15]=1: negative logic, STOP input signal is OFF, STOP input.

#7	#6	H'4196	✓	R/W	Maximum speed V _{max}	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS) *2 Factory setting: 200,000 unit*1
#9	#8	H'4198	✓	R/W	Bias speed V _{bias}	Range: 0 ~ +2,147,483,647 unit*1 (0 ~ 200K PPS pulse transfer value) *2Factory setting: 0 unit*1
#11	#10	H'419A	✓	R/W	JOG speed V _{JOG}	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2Factory setting: 5,000 unit*1
#13	#12	H'419C	✓	R/W	Zero return speed V _{RT}	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2Factory setting: 50,000 unit*1
#15	#14	H'419E	✓	R/W	Zero return deceleration speed V _{CR}	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse transfer value) *2, factory setting: 1,000 unit*1
	#16	H'41A0	✓	R/W	The number of PG0 in zero return mode N	Range: 0~+32,767 PLS, factory setting: 0 PLS
	#17	H'41A1	✓	R/W	The number of pulse in zero return mode P	Range: -32,768 ~+32,767 PLS, factory setting: 0 PLS
	#18	H'41A2	✓	R/W	Zero return mode	b0: Zero return mode, b1: detect DOG falling-edge in zero return mode

bit #	Description
0	b[0]=0: normal mode, b[0]=1: override mode
1	b[1]=0: DOG falling-edge detecting is on in zero return mode. b[1]=1: DOG falling-edge detecting is off in zero return mode.

